

REMARKS

This is in response to the non-final Official Action currently outstanding with respect to the above-identified application.

The present application was originally filed with Claims 1 - 7. By the foregoing Amendment, Claims 2 - 3 and 5 - 7 have been amended. Claims 1 and 4 have been canceled, without prejudice. New Claims 8 and 9 have been added. Accordingly, upon the entry of the foregoing Amendment, Claims 2, 3 and 5 - 9, as amended hereinabove, will constitute the claims under active prosecution in this application.

A "**VERSION SHOWING CHANGES MADE TO THE CLAIMS**" is attached hereto as required by the Rules.

In particular, in the currently outstanding Official Action, the Examiner has:

1. Acknowledged Applicant's claim for foreign priority under 35 USC 119(a)-(d) or (f), and confirmed the receipt by the United States Patent and Trademark Office of the required certified copy of the priority document;
2. Acknowledged his receipt and consideration of the art cited by Applicant in the Information Disclosure Statement filed on 29 March 2000 by providing Applicant with a copy of the Form PTO-1449 that accompanied that submission duly signed, dated and initialed by the Examiner. The Examiner's line-out of item CC on the copy of the above-mentioned Form PTO-1449 is agreed to by the Applicant since the document listed item CC is not appropriate for listing on a printed United States Patent document.

3. Provided Applicant with a copy of a Form PTO-892 (Notice of References Cited) and copies of each of the references cited therein;

4. Indicated that the drawings originally filed with this application on 29 December 1999 are accepted as formal drawings;

5. Rejected Claim 7 under 35 USC 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter that Applicant regards as the invention.

6. Rejected Claims 1 and 5 under 35 USC 102(e) as being anticipated by the Ito, et al reference (US Patent No. 6,088,468);

7. Rejected Claims 3 and 7 under 35 USC 103(a) as being unpatentable over the Ito et al et al reference (US Patent No. 6,088,468);

8. Objected to Claims 2, 4 and 6 as being dependent upon a rejected base claim, but also indicated that those claims would be allowable if rewritten in independent form including all of the limitations of their respective base claims and any intervening claims; and

9. Cited certain additional references as being pertinent to Applicant's disclosure, but not applied any of those references against any of the currently pending claims.

Further comment in these Remarks regarding items 1-4 above is deemed not to be necessary.

With respect to item 5, Applicant respectfully calls the Examiner's attention to the fact that it has hereinabove amended Claim 7 so as to delete the term "the user" and to substitute therefor the term -- a user --. Applicant respectfully submits that this amendment renders moot the Examiner's rejection of Claim 7 under 35 USC 112, second paragraph. Specifically, Applicant respectfully submits that the foregoing amendment removes any implication that the term "user" appears earlier in the claims, i.e., that it has an antecedent basis that the Examiner alleges to be missing. Instead, the foregoing amendment states the term "user" with the indefinite article "a" rather than with the definite article "the". This change of the phraseology of Claim 7 is submitted to remove any need for antecedent basis for the term "user" earlier in the claims, and thus to remove the basis of the Examiner's rejection under 35 USC 112, second paragraph. A decision withdrawing the currently outstanding rejection of Claim 7 under 35 USC 112, second paragraph, in response to this communication, therefore, is respectfully requested.

With respect to items 6 and 7, it is so well established as not to require citation to formal authority that in order for prior art to anticipate a claim each and every element as set forth in the claim must be found, either expressly or inherently described, in a single prior art reference.

The Examiner asserts that the Ito, et al reference satisfies these criteria with respect to the inventions claimed in originally filed claims 1 and 5. The Examiner's basis for these rejections apparently are that he believes that the Ito, et al reference discloses an image processing apparatus including an input means (shown in Fig. 1 at element 11 and in Fig. 12 at element 123); a storage means for storing an input image (shown in Fig. 12 at element 123, and described at Column 3, lines 9-10); a comparing means (as described at Column 3, lines 11-12); and an output means (as shown at Fig. 12, elements 129 and 131).

Further, the Examiner asserts that the Ito, et al comparison means includes means for calculating differences in corresponding pixel densities between input and stored images (as described at Column 3, line 13), and recognizing means for recognizing common portions of the stored and input images by comparing the comparison means output with a preset threshold value (described at Column 3, lines 13-15). Finally, the Examiner asserts that the Ito et al reference discloses that the comparison means cause the output means to output two images corresponding to the stored and the input images wherein the pixels of each that have less than a threshold density level difference between them are not displayed (relying upon the showing of Figs. 9A and 9D).

Applicant respectfully submits that the Ito et al reference deals with a totally different problem that that dealt with by the present invention, i.e., the presence or absence of an object within a monitored area with emphasis upon the avoidance of the detection of "false objects" such as shadows or light beams, as opposed to a device for processing images so as to separate components thereof for independent outputting for display. In this regard, Applicant respectfully submits that the Examiner's reliance upon the various illustrative drawings of the Ito et al reference is misplaced. The majority of the drawings of the Ito et al reference are used to illustratively explain the calculation flow carried out internally by the Ito et al device rather than images that are output for display. Therefore, those drawings represent *virtual* images corresponding to image **data** present at selected points of the internal data manipulation by the Ito et al device, not images for output display. Accordingly, the Ito et al reference is respectfully submitted to be inapposite to the present invention.

Further, Applicant respectfully submits that the nature of the output images actually displayed by component 130 of the Ito, et al reference structure is nowhere definitively defined by the Ito et al reference. Nevertheless, the context of the Ito, et al reference suggests that an alarm and/or an image is generated if a "true object" is detected by the Ito, et al device. This at least implies that the image displayed by Ito, et al in component 130 constitutes the so-called background image with an image of a "true object" somehow included therein either by superimposition on the reference (stored) image or by removal of "false image" portions from the input image.

Stated slightly differently, the Ito et al reference describes a system wherein a reference image input is created that is *virtually* based upon a median value of a plurality of image samples obtained from a specified viewing area. This reference image is also periodically updated. Further, the system monitors the specified viewing area so as to detect the presence of an object therein that is not shown in the reference image by comparing input images to the reference image. Still further, Ito, et al refine the comparison of the reference and input images so as to remove "false object" detections arising, for example, from shadows or light beams extending into the viewing area. A detection of a "true object" in the viewing area sounds an alarm and/or results in a display image on monitor 130, but as mentioned previously, the specific nature of the output image displayed on device 130 is never explicitly specified in the Ito, et al specification. It, however, may reasonably be inferred that the output image in the circumstances would be either the input image or the input image with any false object indication removed therefrom.

Applicant, however, contrary to the Examiner's assertion regarding Claim 5, have found no disclosure, teaching or suggestion in the Ito et al reference to the effect that **two** images are provided, one of the reference image and one of the input image, wherein all pixels within a preset density range of a threshold **are not present**. Indeed, this result would not make sense to one skilled in the art in the context of the Ito, et al reference because it would mean that the image of the reference displayed would be blank while the image of the input image would show only the object.

Neither of these resultant image possibilities would be useful in the Ito, et al. context that desires to sense the presence of an object in association with a particular monitored area. Instead, the reference image and the input image (perhaps with any false object removed) are the important images to a user. The latter images, however, are not those that are required by Claim 5 of this application as hereinabove clarified.

Therefore, it is to be noted that the Applicant now has canceled Claims 1 and 4, without prejudice, and has added its limitations of original Claim 1 to original Claim 2 as suggested by the Examiner (see, item 8). The resultant claim specifies the nature of the output image in a manner clearly distinct from any output image contemplated by the Ito et al reference. Also, amended Claims 5 - 7 are directly or indirectly dependent upon allowable Claim 2 and should be allowable for this reason alone. Further, as noted, the image output specified by amended Claim 5 is not taught, disclosed or suggested by the Ito et al reference, and should be allowable for this reason as well. Similarly, Claim 6 now have been rewritten so as to conform to the Examiner's suggestion, and therefore should be allowable for this reason as well (see item 8).

It is further to be noted that Applicant has combined original Claims 1, 3 and 4 (see item 8) while at the same time correcting the wording of original Claims 3 and 4 by the foregoing amendment. Thus, Applicant generally agrees in light of the background portion of the Ito et al reference that one skilled in the art at the time the present invention was made might in some manner compare several input images sequentially with the same reference image. This, however, is not what the present invention contemplates in Claim 3 and 4, even though the literal wording of the translation of this application from the original Japanese may so suggest. Instead, the present invention contemplates that three or more input images may be compared both with a reference image **and with each other**. To accomplish this, the reference image is compared with a first input image. The result of this comparison is then substituted for the original reference image and a second input image is compared with the new reference image.

Thereafter, this sequence is repeated until all of the images to be compared have been input. The result is a final image that reflects the comparison of all of the input images with each other and also with the reference image.

The specification supports this interpretation at least at at page 6, lines 11-15; page 17, lines 18-23; page 18, lines 5-16; and page 20, lines 11-18. Consequently, the rewording of Claims 3 and 4 along with the corresponding rewording of the specification accomplished hereinabove are respectfully submitted not to introduce any new matter into this application.

Finally, New Claim 8 is a combination of the limitations of original Claim 1 and amended Claim 5. Applicant respectfully submits that similarly to the reasoning supporting the allowability of amended Claim 5, the image output specified by new Claim 8 is not taught, disclosed or suggested by the Ito, et al reference and should be allowable. In addition, New Claim 9 is similar to amended Claim 7, but dependent upon New Claim 8. It is respectfully submitted that New Claim 9 is allowable by virtue of argument directly analogous to that supporting the allowability of amended Claim 7.

Reconsideration and a decision withdrawing the outstanding rejections under 35 USC 102(e) and 103(a) in response to this communication, therefore, are respectfully requested.

With respect to item 9, Applicants respectfully note that the Examiner has not applied any of the references deemed to be "pertinent to Applicants' disclosure" against any of the pending claims of this application. Further comment upon the details of the latter references in these Remarks, therefore, also is not deemed to be either necessary or appropriate.

For each and all of the foregoing reasons and in light of the foregoing Amendment, Applicants respectfully submit that all of the claims currently pending in this application are in condition for allowance. Accordingly, entry of the foregoing Amendment and allowance of the present application as so amended in response to this communication are respectfully requested.

Applicants believe that additional fees are not required in connection with the consideration of this response to the currently outstanding Official Action. However, if for any reason a fee is required, a fee paid is inadequate or credit is owed for any excess fee paid, you are hereby authorized and requested to charge and/or credit Deposit Account No. **04-1105**, as necessary, for the correct payment of all fees which may be due in connection with the filing and consideration of this communication.

Respectfully submitted,

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VERSION SHOWING CHANGES MADE TO THE CLAIMS

Additions shown underlined; Deletions shown in brackets.

IN THE SPECIFICATION:

At page 6, please amend lines 3-10 as follows:

"Further, in the invention it is preferable that:

at least three or more kinds of image information are
sequentially inputted into the input means;

the output means sequentially replaces an image [outputted from the
comparing means] stored in the storing means with an image [stored in the
storing means] outputted from the comparing means after each input of one of
the kinds of images and prior to the next sequential input of another of the
kinds of images; and

the recognizing means recognizes a portion common to an image newly
inputted through the input means and the image stored in the storing means
by comparing the images."

Please amend page 8, line 12 to page 9, line 1, as follows:

"Still further, in the invention it is preferable that the comparing means includes extracting means for causing the output means to output only a pixel of which the difference in pixel values calculated by the calculating means is equal to or less than the threshold value, and eliminating means for causing, when the difference in pixel values calculated by the calculating means is equal to or less than the threshold value, the output means to output the inputted image and the stored image as two images, while preventing a pixel of which the difference in pixel values is equal to or less than the threshold value, from being outputted thereinto[.] .

[t] The apparatus further comprises selecting means for selecting one of the extracting means and the eliminating means, which are included in the comparing means, to be put into operation.

IN THE CLAIMS:

Please cancel Claims 1, 4 and 5, without prejudice.

Please amend Claims 2, 3 and 6 -7 as follows:

2. (Amended) An image processing apparatus comprising at least:

input means for carrying out a distribution process of image information inputted through an image input mechanism;

storing means for storing an image inputted through the input means;

comparing means for comparing an image inputted through the input means with an image stored in the storing means; and

output means for outputting a result of comparison by the comparing means,

wherein the comparing means includes calculating means for calculating a difference in pixel values which represent pixel densities, between an image newly inputted through the input means and an image stored in the storing means, and recognizing means for recognizing a portion common to the stored and newly input images by comparing an output of the calculating means with a preset threshold value, and [The image processing apparatus of claim 1,]

wherein the comparing means includes extracting means for causing the output means to output only [a] pixels corresponding to pixels of the stored and newly input images respectively when [of which] the difference in pixel values calculated by the calculating means is equal to or less than the threshold value.

3. (Amended) [The image processing apparatus of claim 1,] An image processing apparatus comprising at least:

input means for carrying out a distribution process of image information inputted through an image input mechanism;

storing means for storing an image inputted through the input means;

comparing means for comparing an image inputted through the input means with an image stored in the storing means; and

output means for outputting a result of comparison by the comparing means;

wherein the comparing means includes a calculating means for calculating a difference in pixel values, which represent pixel densities, between an image newly inputted through the input means and an image stored in the storing means, and recognizing means for recognizing a portion common to the stored and newly input images by comparing an output of the calculating means with a preset threshold value,

wherein at least three or more kinds of images [information] are sequentially inputted to the input means;

the output means sequentially replaces [an image outputted from the comparing means] an image stored in the storing means with an image [stored in the storing means] outputted from the comparing means after each input of one of said kinds of images and prior to the next sequential input of another of said kinds of images; and

the recognizing means recognizes a portion common to [an image] each kind of image newly inputted through the input means and the image then stored in the storing means by comparing the images, and

wherein the comparing means includes extracting means for causing the output means to output only pixels corresponding to pixels of the stored and newly input images respectively when the difference in pixel values calculated by the calculating means is equal to or less than the threshold value.

5. (Amended) The image processing apparatus of claim [1] 2, wherein the comparing means further includes eliminating means for causing, when the difference in pixel values calculated by the calculating means is equal to or less than the threshold value, the output means to output the inputted image and the stored image as two images, while preventing [a] pixels of said inputted and stored images having a [of which the] difference in pixel values [is] equal to or less than the threshold value[,], from being outputted into the respective output images.

6. (Amended) The image processing apparatus of claim [1] 5, [wherein the comparing means includes [extracting means for causing the output means to output only a pixel of which the difference in pixel values calculated by the calculating means is equal to or less than the threshold value, and eliminating means for causing, when the difference in pixel values calculated by the calculating means is equal to or less than the threshold value, the output means to output the inputted image and the stored image as two images, while preventing a pixel of which the difference in pixel values is equal to or less than the threshold value, from being outputted thereinto,

the apparatus] further comprising:

selecting means for selecting one of the extracting means and the eliminating means [which are included in the comparing means,] to be put into operation.

7. (Amended) The image processing apparatus of claim [1] 2, further comprising:

setting means for allowing [the] a user to set the threshold value .

Please add New Claims 8 and 9 as follows:

8. (New Claim) An image processing apparatus comprising at least:

input means for carrying out a distribution process of image information inputted through an image input mechanism;

storing means for storing an image inputted through the input means;

comparing means for comparing an image inputted through the input means with an image stored in the storage means; and

output means for outputting a result of comparison by the comparing means;

wherein the comparing means includes calculating means for calculating a difference in pixel values, which represent pixel densities, between an image newly inputted through the input means and an image stored in the storing means, and recognizing means for recognizing a portion common to the stored and newly input images by comparing an output of the calculating means with a preset threshold value, and

wherein the comparing means includes eliminating means for causing, when the difference in pixel values calculated by the calculating means is equal to or less than the threshold value, the output means to output the inputted image and the stored image as two images, while preventing pixels of said inputted and stored images having a difference in pixel values equal to or less than the threshold value from being outputted into the respective output images.

9. (New Claim) The image processing apparatus of claim 4, further comprising:
setting means for allowing the user to set the threshold value.